Response of
Wisconsin Power and Light Company
to
The Public Service Commission of Wisconsin
Data Request No. 1.14

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Information Requested By:	Ken Detmer
Date Responded:	February 13, 2009
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Witness: (If other than Author)	

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p. 35 par. 5: Provide update to the anticipated emission levels for Sulfuric Acid Mist (SAM). What levels are being requested in the air permit?

Response:

Sulfuric Acid Mist (SAM) is formed across the catalyst in a Selective Catalytic Reduction (SCR) reactor via oxidation of sulfur dioxide (SO_2). Typical oxidation levels in the catalyst industry are 0.5% per catalyst layer. With 3 layers of catalyst, typically 1.5% of SO_2 will be converted to sulfur trioxide (SO_3). SO_3 combines immediately with water vapor to form sulfuric acid (H_2SO_4). EPA considers H_2SO_4 in both the vapor phase and condensed phase as SAM.

Several factors inherent in a boiler design reduce SAM generated in the SCR. Powder River Basin (PRB) coal ash is high in alkalinity. This ash neutralizes a portion of SAM through contact in the ductwork, air heater, and electrostatic precipitator (ESP) downstream of the SCR. Any carbon used for mercury control will be injected into the air heater and acts as a SO_3 sorbent as well. WPL will consider these effects in the air permit application to predict SAM emissions.

WPL is working with catalyst manufacturers to consider catalyst formulations which can be modified to reduce SO_2 oxidation rates and hence SAM formation. The installed SCR will likely use catalysts with overall SO_2 oxidation rates less than 1.5%. Once preliminary engineering is completed, WPL will have the information necessary to document the formation and controlling aspects of SAM emissions.